

Credit Name: CSE 3120 Object-Oriented Programming 1

Assignment Name: Digit Extractor Mastery

How has your program changed from planning to coding to now? Please explain?

PLANNING:

I plan to create two classes, one for the main Digit Extractor program and another to calculate the ones, tens, and hundreds place value of an entered number.

Digit Extractor: prepare scanner, prompt user for a number, and store the number.

Create an object to link the separate class that will be performing the calculations.

Inside a while loop display a menu including the option to quit, and use a switch statement to follow through with the appropriate calculation selected by user.

Numb: create constructor method to later create an object in the main class. Create 4 methods for the whole number, ones place, tens place, and hundreds place. Calculation will take place inside of the methods.

CODING:

1. Digit Extractor Class

```
//Prepare scanner for user input
Scanner input = new Scanner(System.in);

//Prompt the user to enter a number
System.out.print("Please enter an integer of choice:");
```

Scanner is prepared for user input.

User is prompted to enter a number of choice.

2. Numb Class

```
public class Numb {

    //num variable to store user input number
    private int num;

    //constructor method
    //create Numb class with the variable num
    public Numb (int number) {
        num = number;
    }
}
```

Private Integer num is declared

In the constructor method, num is initialized and equal to number. This means that the user input number is going to be stored as num and used only in the Numb.java class.

3. Digit Extractor Class

```
//We can use num.(method name goes here) to  
Numb num = new Numb(input.nextInt());
```

num object is created in the main class.
It holds the user input value/integer.

4. Digit Extractor Class

```
String choice;  
  
//While loop runs until user quits the program  
while (true) {  
  
    //Options that the user can choose  
    System.out.println("Display (W)hole number");  
  
    System.out.println("Display (O)nes number");  
  
    System.out.println("Display (T)ens number");  
  
    System.out.println("Display (H)undreds number");  
  
    System.out.println("(Q)uit Program");  
  
    System.out.println("Please pick an option:");  
  
    //Choice variable stores user input  
    //Choice set to lower case  
    choice = input.next();  
  
    choice = choice.toLowerCase();  
  
    //If user decides to quit (option q), program ends  
    if (choice.equals("q")) {  
        break;  
    }  
}
```

String choice is declared, which will be used to store the letter entered by user when selecting a menu option.

Menu gives the options to display whole num, ones place, tens place, and hundreds place values. Quit option is also given.

Choice is set to lower case, so that the string choice entered by user is in lower case no matter how they enter it in. (user can enter upper case or lower case letter, but program will set to lower case for ease.)

If the user choice is equal to "q" (the quit option), program will end. Every other choice will run program.

5. Numb class

```
//method gives the whole number value
public int whole() {
    return num;
}

//method gives the ones place value
public int ones() {
    return num%10; // remainder
}

//method gives the tens place value
public int tens() {
    return (num/10)%10; //divi
}

//method gives the hundreds place
public int hund() {
    return (num/100)%10; //div
}
```

Separate methods calculate the whole number, ones place, tens place, and hundreds place values. These methods will be called into the main method in the next step when printing the outputs.

6. Digit Extractor Class

```
switch (choice) {

//Whole number
case "w": System.out.println("your integer is " + num.whole());
    break;

//Ones place
case "o": System.out.println("The ones place digit is: " + num.ones());
    break;

//Tens place
case "t": System.out.println("The tens place digit is: " + num.tens());
    break;

//Hundreds place
case "h": System.out.println("The hundreds place digit is: " + num.hund());
    break;

//Default switch statement
default: System.out.println("Error! you entered something invalid. Please try again.");
}
```

Switch statement uses choice (user string entered) to assign the appropriate calculation/final output using different cases. Depending on the letter entered (choice), a certain case runs which prints the output.

The default statement is there in case of a user error.

End Of Program!